

We claim:

- 1 1. An ignition system for an internal combustion engine comprising:
  - 2 - an output for electrical activation of an ignition element for a combustion chamber in
  - 3 an internal combustion engine,
  - 4 - an electrical energy accumulator connected to the output for accumulating the
  - 5 electrical energy required for activating the ignition element,
  - 6 - a controllable control element connected to the energy accumulator which is used to
  - 7 charge the energy accumulator during a predefined charge time,
  - 8 - a measuring unit for detecting the charge state of the energy accumulator,
  - 9 - wherein to set the charge time for the energy accumulator, a timer is provided,
  - 10 - said timer being connected to the control element on the output side,
  - 11 - wherein the measuring unit is connected to said timer in a feedback loop whereby the
  - 12 timer adjusts the charge time according to the measured charge state of the energy
  - 13 accumulator, and wherein the measuring unit and the control element, on the one
  - 14 hand, and the timer, on the other hand, are interconnected via a bidirectional control
  - 15 line, and
  - 16 - wherein the energy accumulator is connected to a voltage measurement unit that
  - 17 monitors the ignition voltage wherein the voltage measurement unit is connected to
  - 18 the control line on the output side via a controllable current source or a controllable
  - 19 current sink to superimpose a current signal on the control line according to the
  - 20 measured voltage.
- 1 2. The ignition system according to claim 1, wherein the measuring unit has a
- 2 precision resistor that is connected in series to the energy accumulator.
- 1 3. The ignition system according to claim 2, wherein a threshold element is
- 2 arranged in the feedback loop between the measuring unit and the timer that compares
- 3 the measured charge state of the energy accumulator with a predefined threshold value
- 4 and generates a control signal for the timer according to the comparison.

1 4. The ignition system according to claim 1, wherein the measuring unit is  
2 connected to the control line via a controllable current sink and/or a controllable  
3 current source to superimpose a current signal on the control line for feedback to the  
4 timer.

1 5. The ignition system according to claim 1, wherein the voltage measurement  
2 unit comprises a comparator with two inlets between which the energy accumulator is  
3 connected, wherein the comparator activates the controllable current source or the  
4 controllable current sink when exceeding a predefined reference voltage value.

1 6. The ignition system according to claim 5, wherein the energy accumulator is  
2 connected to the comparator via a protective resistor.

- 1 7. A method for controlling the an ignition system for an internal combustion  
2 engine comprising the steps of :
- 3 - charging an energy accumulator during a predefined charge time to accumulate  
4 electrical energy for providing an ignition voltage,  
5 - detecting the charge state of the energy accumulator,  
6 - setting the charge time for the energy accumulator by means of a timer via a  
7 bidirectional line, wherein the timer adjusts the charge time according to the measured  
8 charge state of the energy accumulator via said bidirectional line, and  
9 - measuring the ignition voltage thereby superimposing a current signal on the  
10 bidirectional line according to the measured voltage.
- 1 8. The method according to claim 7, further comprising the step of comparing the  
2 measured charge state of the energy accumulator with a predefined threshold value  
3 and generating a control signal for the timer according to the comparison.
- 1 9. The method according to claim 7, further comprising the step of superimposing  
2 a current signal on the bidirectional line for feedback to the timer.
- 1 10. The method according to claim 7, wherein the current signal is superimposed  
2 when the ignition voltage exceeds a predefined reference voltage value.

- 1 11. An ignition system for an internal combustion engine comprising:
- 2 - an output for electrical activation of an ignition element for a combustion chamber in
- 3 an internal combustion engine,
- 4 - an electrical energy accumulator connected to the output for accumulating the
- 5 electrical energy required for activating the ignition element,
- 6 - a controllable control element connected to the energy accumulator which is used to
- 7 charge the energy accumulator during a predefined charge time,
- 8 - a measuring unit for detecting the charge state of the energy accumulator,
- 9 - wherein to set the charge time for the energy accumulator, a timer is provided,
- 10 - said timer being connected to the control element on the output side,
- 11 - wherein the measuring unit is connected to said timer in a feedback loop whereby the
- 12 timer adjusts the charge time according to the measured charge state of the energy
- 13 accumulator, and wherein the measuring unit and the control element, on the one
- 14 hand, and the timer, on the other hand, are interconnected via a bidirectional control
- 15 line,
- 16 - wherein the energy accumulator is connected to a voltage measurement unit that
- 17 monitors the ignition voltage wherein the voltage measurement unit is connected to
- 18 the control line on the output side via a controllable current source or a controllable
- 19 current sink to superimpose a current signal on the control line according to the
- 20 measured voltage,
- 21 - wherein the measuring unit comprises a precision resistor that is connected in series
- 22 to the energy accumulator, and
- 23 - wherein a threshold element is arranged in the feedback loop between the measuring
- 24 unit and the timer that compares the measured charge state of the energy accumulator
- 25 with a predefined threshold value and generates a control signal for the timer
- 26 according to the comparison.

1 12. The ignition system according to claim 11, wherein the measuring unit is  
2 connected to the control line via a controllable current sink and/or a controllable  
3 current source to superimpose a current signal on the control line for feedback to the  
4 timer.

1 13. The ignition system according to claim 11, wherein the voltage measurement  
2 unit comprises a comparator with two inlets between which the energy accumulator is  
3 connected, wherein the comparator activates the controllable current source or the  
4 controllable current sink when exceeding a predefined reference voltage value.

1 14. The ignition system according to claim 13, wherein the energy accumulator is  
2 connected to the comparator via a protective resistor.